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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 14

Application Number: 09/712,144
Filing Date: November 15, 2000
Appellant(s): BRAUN ET AL.

William S. Francos
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed January 6, 2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 13,21 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

A substantially correct copy of appealed claims 1-29,31-33 and 35-38 appears on pages 16-23 of the Appendix to the appellant's brief. The minor errors are as follows:

Claim 33 appears twice. Claim 33 starts on page 21 of the Appendix of the Brief and ends on page 22, line 8. Line 8 also starts another copy of Claim 33 and ends four lines up from the bottom of page 22.

(9) Prior Art of Record

5,486,836	KUFFNER et al.	1-1996

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-29, 31-33 and 35-38 stand rejected under 35 U.S.C. 102(b) as being anticipated by Kuffner et al. This rejection is set forth in prior Office Action, Paper No. 9.

(11) Response to Argument

Several issues have been raised in the Brief and they will be addressed in the order that they appear as follows.

Appellant alleges in the paragraph bridging pages 6 and 7 of the Brief, that the Office action has not met the initial burden of supporting a *prima facie* case of anticipation in the rejection in view of Kuffner et al, and therefore concludes that the rejection is improper and should be withdrawn. Three court cases have also been cited setting forth arguments for "a proper rejection of anticipation" in the first paragraph on page 7 of the Brief.

Contrary to appellant's arguments, the final Office action **does** identify all elements claimed as shown in the Kuffner et al patent. But, appellant argues that the phrase, "each of said plurality of antenna configuration states is adapted for use of the antenna device **in a respective predefined physical operation environment**"

(appellant's emphasis), recited in Claim 1, with similar limitations in independent Claims 24,29,31 and 33, is not anticipated by the Kuffner et al reference.

However, it must be pointed out here that appellant has omitted a clause from the above-cited quotation of Claim 1. That clause is as follows: "in said radio communication device" which appears before the clause above that is in bold. The entire clause is as follows:

"each of said plurality of antenna configuration states is adapted for use of the antenna device in said radio communication device **in a respective predefined physical operation environment**".

Appellant's arguments emphasize that the antenna device relates to the operation environment, rather than the communication device. It must be recognized here that once the antenna arrangement is mounted within the casing of the communication device, both in the invention, and in the Kuffner et al patent, the antenna is somehow "adapted" via electronic switching. In the case of Kuffner et al, the antenna patches are switched to respond to a particular polarization, defining polarization diversity. Such diversity is desired because the portable communication device, e.g., a mobile telephone/radio, is to maintain radio contact with the cellular site regardless of the phone's orientation. The patch antennas within the phone's casing in Kuffner et al are "in a respective predefined physical operation environment". Namely, the patches are within the housing 900 and a first patch 904 is within the rear of the housing 902, and the other patch 906 is mounted on the "flip portion", all shown physically separated and connected via switches 908,910. The physical separation of two antenna elements

allows "spatial diversity" because the radio is able to receive/transmit with the appropriate patch that allows the greatest signal strength. The position of the patches meets the language "in a respective predefined physical operation environment" in Claims 1,24,29,31 and 33. In other words, each patch is located in a "respective predefined physical operation environment." The plurality of configuration states of the antennas are defined by the appropriate switching of a particular patch, when the control device within the radio/phone measures the signal strength and permits the switching of the appropriate antenna polarization mode for the respective antenna. The selection of the proper polarization mode is made based upon a predetermined signal quality of both patches. Well-known diversity algorithms are used in the control device to determine the best antenna to use (see column 4, lines 19-21, column 5, third paragraph, column 6, lines 4-8 and in the second paragraph of column 6 of Kuffner et al, where all embodiments use a received signal strength indication, RSSI diversity algorithm). It is inherent in and implied in the phone of Kuffner et al that the phone must include circuitry to perform the algorithm used, and thus a control circuit to measure the signal quality of both patches. Such circuitry is a requirement for the phone to operate as disclosed by Kuffner et al.

From this analysis, it can be seen that since the respective patches are arranged in a particular way, i.e., their environment with respect to the user, each patch is capable of being "switched" with a respective polarization mode dependent upon signal strength and sufficient enough to maintain a phone connection by communicating with the cellular phone site. It can therefore be clearly seen that each configuration state

(e.g., polarization mode in Kuffner et al) is adapted for use of the antenna device (i.e., each patch in the spatial arrangement), in the communication device (e.g., cell phone 900 in Fig. 9) in a respective predefined physical operation environment (the two patches are physically separated, therefore predefined, and are employed in the user's environment).

Appellant argues in the paragraph bridging pages 7 and 8 of the Brief that in the specification as filed, the term "predetermined physical operation environment" refers to a "close-by environment, which comprises objects" that affect the parameters of the antenna structure when installed in a small-sized radio communication device. With appellant's definition in mind, it is seen that when the user defines the environment, the parameter, of polarization mode in each patch is adapted to that environment. That is precisely what is shown in Kuffner et al. The phone in Fig. 9 of Kuffner et al is used against the head of the user. The patch 904 is near the ear and cheek and the operator's hand grasps the phone casing near or over said patch. The other patch 906 is near the operator's jaw, because the flip portion, housing the patch 906, includes the microphone for the radio 900. Therefore, contrary to appellant's belief and arguments at the top of page 8 of the Brief, the "element", that is, the "predefined physical operation environment" is most certainly found in the teaching of Kuffner et al, and in the mere use of the cellular phone illustrated in Fig. 9. Figure 9 and its relationship to the head of the user cannot be disputed. Claim 1 is definitely anticipated (under all guidelines submitted by appellant in the court cases) by Kuffner et al. The first

paragraph on page 8 of the Brief sets forth examples of the predefined operation environment; i.e., a talk position, a free space position, a waist position and a pocket position. These are simply cellular phone positions, in which all cell phones work. The phone is required to work in all of the positions cited by appellant in order for the cellular phone to be in communications with the cell site. Included here is the "talk position". Figure 9 of Kuffner et al shows the talk position. A waist or pocket position in using the Kuffner et al phone is when the flip portion is closed. The phone is operational when the flip portion is closed and is "switched", in any desirable polarization mode, to receive signals.

In keeping with *Glaverbel* (one of the court cases cited and made reference to on page 8, line 2 of the Brief), all of the elements of the claims are identified and their meaning determined in light of the specification. The element, "predefined physical operation environment", is discussed in appellant's specification and identified as the user. It appears that appellant actually would like to see that phrase (the "element", or "predefined physical operation environment") in the patent of Kuffner et al. (see the sentence in lines 5-7 on page 8 of the Brief). Why does a patent, used in an anticipation rejection, have to mention the exact phrase used in appellant's claims? Exact words are unnecessary for anticipation. This is one case where a "user", the so-called "element" or "predefined physical operation environment", is implied and inherent in the reference of Kuffner et al. A user is required for using the phone of Kuffner et al. The phone/radio is a "flip phone", made to exist in free space (as sitting on a table,

clipped on a belt or disposed in one's pocket), and then opened so the user receives the call, i.e., the "talk position". Those are two different, predefined physical operation environments. The very same environments intended by appellant and implied in the claims.

Appellant states in the specification on page 6, lines 6-7, that the "environment includes, of course, the user of the communication device." When using the phone of Kuffner et al, there is a predefined physical operation environment as recited in the claims. Figure 9 of Kuffner et al is the predefined "talk position". Appellant seems to equate the environment as a missing "element" in a reference and thus concludes that no anticipation results in the rejection using Kuffner et al. However, the Kuffner et al reference does show each and every element; the environment includes the user. The user is always "in close proximity to the antenna device", well within a wavelength of the frequency of operation of cellular phone frequencies (e.g., one wavelength at 900 MHz is 3cm).

Regarding the arguments in the paragraph bridging pages 8 and 9 of the Brief, there is an example of compensating for a change in resonance frequency caused by the user. Such a condition is not applicable in Kuffner et al because there is no frequency resonance compensation, only a polarization compensation based upon signal strength; and polarization is one of the parameters claimed (e.g., in Claim 1, lines 4-5 in the clause "such as resonance frequency, input impedance, bandwidth, radiation

pattern, gain, polarization and near-field pattern"). Kuffner et al was chosen as a reference because it shows precisely an antenna structure switchable between a plurality of antenna configuration states, each of which is distinguished by a set of radiation parameters. Those parameters are polarization modes. The polarization modes change when the environment is changed in order to provide the highest signal level maintaining communication with the cellular phone site. The environment changes when the used opens the flip portion when the phone rings, to the talk position. Kuffner et al do not have to make such an exact statement because that is the way their phone works (e.g., the flip phone in Fig. 9).

The flow charts of Figures 7 and 8 of Kuffner et al describe the operation of their invention. They essentially describe what the algorithm does, based upon the signal strength (i.e., RSSI). The circuitry that performs the algorithm controls the switches (e.g., in Figures 5 and 6) connected to the patches.

Appellant states in the first paragraph on page 9 of the Brief that Kuffner et al neither teaches nor suggests such a limitation, referring to the operation state from the free space to talk positions mentioned in the previous paragraph of the Brief. However, the operation of the Kuffner et al phone certainly provides the operation state from free space to talk positions. The Kuffner et al phone in Fig. 9 thereof, is a "flip phone". The flip portion is pivoted away from the casing and thus is open in the talk position, and the phone housing is against the user's head. The flip portion is normally closed, against

the casing 902 and adjacent the keypad, and is in a receive mode. The flip portion can certainly be left open, set on a table, placed in a pocket or on a belt. The flip portion can also be closed and the radio placed in a pocket, set on a table or clipped to a belt. These are all positions the phone may be in, receiving and transmitting signals to the cellular site; and certainly without any doubt, signal strength is constantly changing due to its environment, and thus the antennas are switched based upon the signal strength and performed by the algorithm circuitry.

Appellant correctly describes two types of diversities, i.e., spatial diversity and polarization diversity and their characteristics in the second and third paragraphs on page 9 of the Brief, because they pertain to the invention of Kuffner et al. However, in the paragraph bridging pages 9 and 10 of the Brief, appellant incorrectly defines and characterizes the operation of the phone and signal strength properties. Contrary to appellant's arguments, the measure of the received signal strength **is** an adaptation for use of the antenna device based on a physical property of the operation environment of the phone, and how it is positioned, merely in a pocket of a user walking down the street. Signal strength varies because of the operation environment and the polarization mode in Kuffner et al is changed to maintain communications. Polarization is constantly changing as correctly characterized in the third paragraph on page 9 of the Brief. Kuffner et al provide the antenna system to compensate for environmental changes. Polarization switching is the result. It is the algorithm that allows the measurement of the signal strength, and its circuitry that controls the switching to

effectively change polarization of either or both patch antennas and maintain the signal (appellant incorrectly states that Kuffner et al teach "the selection of one of the patch antennas" in the paragraph bridging pages 9 and 10 of the Brief. But, two patches do have polarization mode control, in Figs. 5 and 6). The change in polarization mode is the result. This result is the "adaptation for use of the antenna device based on a physical property of the operation environment" (as used in the sentence bridging pages 9 and 10 of the Brief). As appellant states in his specification, "the environment includes, of course, the user of the communication device."

In the first sentence on page 10 of the Brief, appellant states "differently", the invention of Claim 1, and that "includes the choosing of a particular antenna configuration based upon a particular physical operation environment, regardless of the quality of the signal." However, Claim 1 says nothing of signal quality. It does state "a plurality of antenna configuration states, each of which is distinguished by a set of radiation parameters, such as...polarization". That is precisely why Kuffner et al is used in the anticipation rejection. Kuffner et al has polarization as the radiation parameter claimed. When using the Kuffner et al phone, the choice of a particular antenna configuration is opening or closing the flip portion, **and/or** simply configuring the respective patch for a specific polarization (see Figures 5 and 6 of Kuffner et al), for which the algorithm circuitry performs such a measurement and control of the switches to the patches, based upon a particular physical operation environment. The "quality of the received signal" is not an issue in Claim 1. The limitations in Claim 1 do not

preclude the use of an antenna system such as shown by Kuffner et al. It is the radiation parameter, namely polarization mode, that is of issue when reading the claim on the reference.

Furthermore, appellant also lists "gain" as one of the "radiation parameters". Gain is directly related to signal strength in a particular environment.

Regarding the argument in the first and second paragraphs on page 10 of the Brief, it must be noted that any physical change in position of the Kuffner et al phone, must have a corresponding change in its antenna configuration via a polarization mode change, simply by opening the flip portion or raising it to the head of the user.

Appellant argues for the limitations of Claim 29, in the paragraph bridging pages 10 and 11, through the third paragraph on page 11 of the Brief, "wherein a measure of the detected physical property of the operation environment is received from at least one sensor, particularly...sensor." The "measure of the physical property is to include a sensor, with examples of sensors given in Claim 29. Since the antenna arrangement in Kuffner et al senses the signal strength, via a common voltage (resistive) divider network, or senses the orientation of the phone via a change in polarization because of a signal strength level reduction, then the limitation of the additional sensor in Claim 29 is in fact anticipated by Kuffner et al. Polarization mode is changed in Kuffner et al due to a sensing or measuring of the signal strength, which is directly proportional to the "orientation" of the phone in the operation environment. Signal strength reduction

happens because of the "detection or measure of a physical property of the operational environment". When the orientation of the phone is changed, that results in a signal level reduction. The algorithm circuitry senses the orientation of the phone by virtue of the signal level reduction. To maintain the signal strength above a predetermined threshold, the circuit in Kuffner et al compensates by changing the polarization of the antenna patches.

Regarding the arguments in the last paragraph on page 11 through the first paragraph on page 12 of the Brief, relative to Claims 31 and 32, in the flowchart of Kuffner et al, Figure 8, the last two steps 810,812 provide for two detected physical properties because there are two patches in which the signal level is measured. Thus, polarization is changed according to the two detected physical properties (e.g., opening the flip portion from a pocketed phone position).

Regarding the arguments in the first paragraph on page 12 of the Brief, relative to Claim 21, they are not at all understood because in that claim there is a listing of examples of antennas, which includes a patch, and Kuffner et al show patches. The claim states an antenna structure including an "antenna element having any of...patch...configurations." The claim only limits Claim 1 to a patch antenna. Kuffner et al anticipate such a claim.

Regarding the argument in the last paragraph on page 12 through the first paragraph on page 13, relative to the limitations of Claim 26, dependent from Claim 24, as stated above, there are (at least) two position states in the use of the phone of Kuffner et al. The phone is open as in Fig. 9 therein. Alternatively, the flip portion is closed. Both positions require polarization changes due to signal strength reductions based upon environment. The phone may be placed in a pocket, on a table or on a belt. Repositioning the phone, e.g., a transmit orientation, requires signal strength measurements and thus polarization switching.

Regarding the arguments in the second paragraph on page 13 through page 14 of the Brief, Kuffner et al show the limitations of, and anticipates, Claim 17, which includes a plurality of antennas, as in Figures 3-6. Each antenna patch is capable of two polarization modes.

Appellant's primary argument in the Brief hinges on semantics, particularly the phrase, "predetermined physical operation environment", which appellant believes to be an "element" not taught in the reference. Thus, appellant believes that there is no anticipation of the claims present in the rejection employing the Kuffner et al patent. However, the Kuffner et al patent specifically discloses a portable, hand-held phone/radio. It is implied that such a phone constantly changes "physical operation environment". Examples of use are the phone in a pocket, on a belt or merely lying on a table. The phone is in the receive mode, ready to answer calls. A call comes in, the

phone is grasped by the operator (a change in operation environment), the flip portion is opened (a change in operation environment), the phone is placed along-side the user's head (a change in operation environment), the phone is constantly rotated along one's ear (a change in operation environment) and merely walking with the phone, where signals are constantly "interrupted" due to room obstructions, buildings, people, and any object in the path of signals (a change in operation environment).

All of these positions fall under a "predefined physical operation environment". Kuffner et al's invention is solely directed to changing environment, and solves the problem of signal degradation due to the phone's environment. The polarization of the antennas in Kuffner et al constantly changes due to the signal strength variation caused by operation environment. Using the phone, alongside the user's head is definitely a "predefined physical operation environment". Degradation in signal strength occurs when the phone is placed near the user's body. The solution provided by Kuffner et al is to provide switching polarization modes in two antennas. The switching is effected via circuitry that produces an algorithm directed to the measured signal strength.

Since all claimed structure has been shown in the prior art, no elements have been omitted, then anticipation under 35 USC 102 has been clearly set forth.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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